LIST OF TABLES

Chapter Fifty-three

Geometric Design Tables (New Construction/Reconstruction)

This chapter presents the Department's criteria for the design of new construction and reconstruction (4R) projects. The designer should consider the following in the use of the tables.

1. Project Scope of Work (Freeways). The geometric design criteria in Table 53-1 applies to new construction and complete reconstruction of freeways. The Department has adopted separate criteria for 3R projects and partial 4R projects on freeways. See Chapter Fifty-four. Chapters Forty and Fifty-four provide definitions for the freeway project scopes of work, which will determine when to use which set of criteria for project design.

2. Project Scope of Work (Non-Freeways). The geometric design criteria in Tables 53-2 through 53-9 apply to new construction/reconstruction (4R) projects on non-freeways. The Department has adopted separate criteria for the geometric design of 3R non-freeway projects. See Chapter Fifty-five. Chapter Forty provides definitions for the non-freeway project scopes of work, which will determine when to use which set of criteria for project design.

3. Functional Classification. The selection of design values depends on the functional classification of the highway facility. This is discussed in Section 40-1.01. Functional classification maps for all public roads in the State are available from the Roadway Management Division.

4. Urban Design Subcategories. Within an urbanized or urban area, the selection of design values depends on the design subcategory of the facility. Separate criteria are presented for "suburban," "intermediate," and "urban" subcategories. These classifications are defined as follows:

    a. Suburban. These areas are usually located at the fringes of urbanized or small urban areas. The predominant character of the surrounding environment is usually residential, but it may include a considerable number of commercial establishments, especially strip development along a suburban arterial. There may also be a few industrial parks in suburban areas. On suburban roads and streets, drivers usually have a significant degree of freedom but, nonetheless, they must also devote some of their attention to entering and exiting vehicles. Roadside development is characterized by low to moderate density. Pedestrian activity may or may not be a significant design factor. Right-of-way is often available for roadway improvements.

Local and collector streets in suburban areas are typically located in residential areas, but may also serve a commercial area. Posted speed limits typically range between 50 and 80 km/h. The majority of intersections will have stop or yield control, but there will be an occasional traffic signal. A typical suburban arterial will have strip commercial development and perhaps a few residential properties. Posted speed limits usually range between 60 and 90 km/h, and there will usually be a few signalized intersections along the arterial.

b. Intermediate. As the name implies, intermediate areas fall between suburban and built-up areas. The surrounding environment may be either residential, commercial or industrial or some combination of these. On roads and streets in intermediate areas, the extent of roadside development will have a significant impact on the selected speeds of drivers. The increasing frequency of intersections is also a major control on average speeds. Pedestrian activity has now become a significant design consideration, and sidewalks and cross walks at intersections are common. The available right-of-way will often restrict the practical extent of roadway improvements.

Local and collector streets in intermediate areas typically have posted speed limits between 50 and 70 km/h. The frequency of signalized intersections has increased substantially when compared to suburban areas. An arterial in an intermediate area will often have intensive commercial development along its roadside. Posted speed limits range between 60 and 80 km/h. These arterials typically have several signalized intersections per kilometer.

c. Built-up. These areas normally refer to the central business district within an urbanized or small urban area. The roadside development has a high density and is often commercial. However, a substantial number of roads and streets in built-up areas pass through a high-density environment (e.g. apartment complexes, row houses). Access to property is the primary function of the road network in built-up areas. Pedestrian considerations may be as important as vehicular considerations, especially at intersections. Right-of-way for roadway improvements is usually not available.

Because of the high density of development in built-up areas, the distinction between the functional classes (local, collector or arterial) becomes less important when considering signalization and speeds. The primary distinction among the three functional classes is often the relative traffic volumes and, therefore, the number of lanes. As many as half the intersections may be signalized; posted speed limits typically range between 40 and 60 km/h.

See Section 40-1.01 for definitions of the functional classifications (e.g.,freeway).

5. Rural Tables. The rural tables do not provide design criteria for sub-categories. However, there are many "rural" facilities in Indiana which pass through relatively built-up, but unincorporated, areas. In these cases, it may be inappropriate to use the criteria for rural roads and highways. The designer may, as an option, use the "suburban" criteria for that functional classification (e.g., arterials) in relatively built-up rural areas. Therefore, if the area is "urban" in character (e.g., a densely populated area with a grid-like street system), it may be appropriate to use the urban design criteria even though the facility is rural. This decision will be documented in the Preliminary Engineering Report (see Chapter Seven).

6. Cross Section Elements. The designer should realize that some of the cross section elements included in a table (e.g., sidewalk width) are not automatically warranted in the project design. The values in the tables will only apply after the decision has been made to include the element in the highway cross section.

7. Manual Section References. These tables are intended to provide a concise listing of design values for easy use. However, the designer should review the *Manual* section references for greater insight into the design elements.

8. Footnotes. The tables include many footnotes, which are identified by a number in parentheses (e.g., (6)). The information in the footnotes is critical to the proper use of the design Tables 53-1, 53-2, 53-3, 53-4, 53-5, 53-6, 53-7, 53-8 and 53-9.